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TOPIC(s) : Alternative technologies

Ultrasound assisted extraction of total phenolic compounds from date fruit (Phoenix Dactylifera)

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PURPOSE OF THE ABSTRACT

Ultrasound-assisted extraction is alternative technique which reduce considerably the use of solvents and accelerate the extraction process. In this context and in order to optimize the extraction conditions of total phenolic contents and evaluation of antioxidant activity of date palm fruit using ultrasound assisted extraction. The Box-Behnken design was used to study effects of three independent variables, acetone concentration (40-80%), sonication amplitude (50-100%), and extraction time (15-35 min). The statistical optimization revealed that extraction with acetone concentration of 66.71% (v/v) for 29.58 min with sonication amplitude of 64.78% were the best combination of these variables. The corresponding experimental values for both TPC and AA were 725.33 and 39.61 mg GAE/100 g DM of date fruit, respectively. Predicted values were in close agreement with experimental ones. Elaborated models were significant ($P > 0.05$) with high regression coefficients ($R^2 > 0.9$) and insignificant lack of fits that confirm the validity and success of both MRS models to optimize extraction conditions of antioxidants date fruit. This methodology could be applied in the extraction of bioactive compounds in the natural product industry.

FIGURES

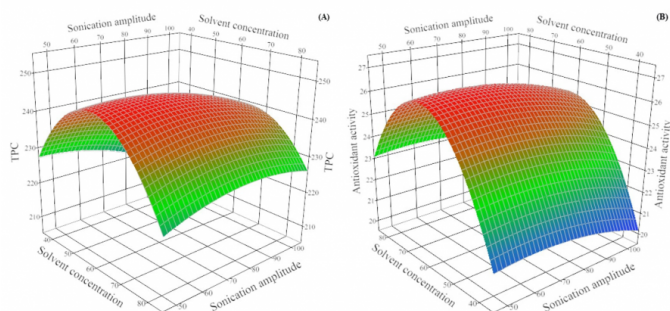


FIGURE 1

Response surface plots showing the effects of acetone concentration (%) and ultrasound amplitude (%) on (A) TPC (mg GAE/100 g DM) and (B) antioxidant activity (mg GAE/100 g DM) from date fruit.

TPC Total phenolic compounds

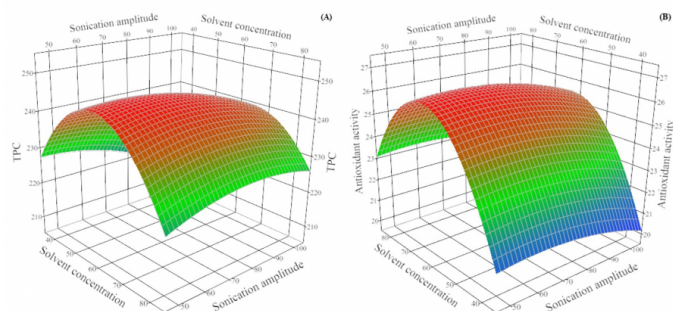


FIGURE 2

RESPONSE SURFACE PLOTS SHOWING THE EFFECTS OF ACETONE CONCENTRATION (%) AND TIME (MIN) ON (A) TPC (MG GAE/100 G DM) AND (B) ANTIOXIDANT ACTIVITY (MG GAE/100 G DM) FROM DATE FRUIT.

TPC: total phenolic compounds

KEYWORDS

ultrasonic-assisted extraction | date fruit | phenolic compounds | optimization

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